

REMARKS

This case has been carefully reviewed and analyzed in view of the Office Action dated 17 October 2003. Responsive to that Office Action, a Terminal Disclaimer To Obviate A Provisional Double Patenting Rejection Over a Pending Second Application is, along with the requisite fee, submitted herewith. Also, Claims 1 and 5 are amended for further prosecution with the other pending Claims.

In the Office Action, the Examiner provisionally rejected Claims 1-3 and 9 under the Judicially created Doctrine of Obviousness-Type Double Patenting as being unpatentable over Claims 1-3 and 8-9 of co-pending Application No. 09/938,959, in view of the Edlund, et al. Application. The Terminal Disclaimer and fee submitted herewith now obviate this provisional double patenting rejection.

Also in the Office Action, the Examiner rejected Claims 1-2, 4, and 8-10 under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art disclosed in the subject Patent Application, in view of the Edlund, et al. reference. In setting forth this rejection, the Examiner acknowledged that the admitted prior art fails to disclose the use of a diaphragm pump or a switch. The Examiner, however, cited Edlund, et al. for disclosing in its Fig. 7 a dual-head pump 350 including a diaphragm pump, as well as valves 62 and 32 connected with the anode gas supply. The Examiner concluded, then, that it would have been obvious

to one of ordinary skill in the art to have made use of such devices in the admitted prior art's anode stream recirculation.

The Examiner rejected Claim 3 also under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of the Edlund, et al. reference, and further in view of the Tanaka, et al. reference. In setting forth this rejection, the Examiner additionally cited Tanaka, et al. for disclosing first and second electromagnetic valves. The Examiner concluded from this that it would have been obvious to one of ordinary skill in the art to have further incorporated the use of electromagnetic valves in the admitted prior art's anode stream recirculation.

As for Claims 5-7, the Examiner merely objected to those Claims as being dependent upon a rejected base claim, but indicated that they would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Accordingly, Claim 5 has now been amended to independent form incorporating the subject matter of Claim 1 from which it had depended. It is believed, therefore, that Claim 5, as well as Claims 6 and 7 depending therefrom, are in allowable form.

Claim 1 has also been amended. Claim 1 now more clearly recites an anode stream recirculation system for a fuel cell including among its combination of features "a switch connected with ... [an] anode gas supply for controlling the release of anode gas therefrom." The system also includes among its features a diaphragm pump connected to "form an anode gas recirculation path for the fuel

cell,” which is “operable responsive to anode gas pressure within the recirculation path.” The diaphragm pump includes at least one “sensor electrically connected with the switch for automatically controlling the selective actuation thereof,” as Claim 1 also now more clearly recites.

The full combination of these and other features now more clearly recited by Applicant’s pending Claims is nowhere disclosed by the cited prior art. As the Examiner readily acknowledged, the admitted prior art does not disclose the use of either a diaphragm pump or a switch. Consequently, it fails to even suggest the full combination of features, as now more clearly recited by Claim 1.

While the Examiner correlates Edlund, et al.’s dual-head pump 350 and purge and throttle valves 42, 62 with Applicant’s diaphragm pump and switch, the dual-head pump 350 is not even connected so as to “form an anode gas recirculation path for the fuel cell.” Thus, it could not form the “diaphragm pump ... operable responsive to anode gas pressure within the recirculation path” recited by Claim 1, if for the simple reason that such recirculation path is non-existent in the Edlund, et al. system.

Also, neither of Edlund, et al.’s valves 42, 62 is “connected with the anode gas supply for controlling the release of anode gas therefrom,” as Claim 1 now more clearly recites. Instead, Edlund, et al. specifically prescribes the valve 42 as a purge valve to be used as “required” for “periodic purge of hydrogen-rich gas from the anode chamber” 28 of the fuel cell 10 (Paragraph [0032]). Throttle valve

62 is provided only to regulate the flow of propane or natural gas fuel to the fuel processor 12 “during ... [its] cold start-up,” (Paragraph [0027]). The intended functions of these valves 42, 62 obviate any need “for automatically controlling the selective actuation thereof,” as Claim 1 recites, let alone for any “sensor” of the diaphragm pump being “electrically connected” to them, for this purpose.

Given such contrary teachings of the admitted prior art and the Edlund, et al. reference, the disclosures of the secondarily cited Tanaka, et al. reference are found to be quite ineffectual to the present patentability analysis. Tanaka, et al. was cited for disclosing the use of electromagnetic valves, but their use in the reference is merely for emergency shut down of a vehicle’s onboard hydrogen using system, in the event of the vehicle’s crash. The reference nowhere discloses any use of the electromagnetic valves in the manner recited by Applicant’s pending Claims.

It is respectfully submitted, therefore, that the admitted prior art, the Edlund, et al. reference, and the Tanaka, et al. reference, even when considered together, fail to disclose the unique combination of elements now more clearly recited by Applicant’s pending Claims for the purposes and objectives disclosed in the subject Patent Application.

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It is now believed that the subject Patent Application has been placed fully
in condition for allowance, and such action is respectfully requested.

Respectfully submitted,



Jun Y. Lee
Registration #40,262

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Suite 101
3458 Ellicott Center Drive
Ellicott City, MD 21043
(410) 465-6678



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